



Natural Resources Law Center
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RE: Semi-Annual Performance Report

“Climate and Management of the Colorado River” (project # 1542258; award number NA05OAR4311127). Project PI’s: Doug Kenney, Andrea Ray, Roger Pulwarty.

Project Status

Although the timing of the project needs some official adjustments, the research activities are otherwise on schedule. As you’ll recall, there was a considerable delay in the start of the project due to problems associated with NOAA’s budget process and the conversion to a new federal grant award system. To recap, the project proposal listed a start date of 1/1/05, which was theoretically viable given that the notification of the award occurred during 12/04. However, delays in transferring funds led to a revised (official) start date of 7/1/05 which proved overly ambitious given further delays in transferring funds. Ultimately funds were not received at the University of Colorado until October, 2005. Additionally, while the official start date was extended somewhat, the end date was not adjusted. The net result is that the official end date of the project is roughly 9 months ahead of the work schedule, and given the recently chaotic political situation in the Colorado River Basin, the most appropriate end date should be extended a full 12 months. Thus, I am initiating the paperwork necessary to request a one-year (no cost) extension, which is consistent with the advice you provided to me last month.

Progress to Date

Perhaps the single greatest accomplishment to date in the project has been to coordinate this research with related work in progress through the Western Water Assessment (WWA), which is being done to leverage both intellectual and budgetary resources with the intent of improving both efforts. While this approach is proving very productive and beneficial, it increases the administrative burden, and it can make it difficult to precisely attribute activities and products to each

funding stream. Nonetheless, this leveraging has made it possible for us to envision the following expanded suite of work products:

- A report to be submitted to NOAA covering all the subjects identified in the proposal.
- A report to be submitted to a water resources journal (likely the *Journal of the American Water Resources Association*) entitled: "Severe Drought on the Colorado: Moving Beyond the Worst Case Scenario?" This paper reviews the assumptions and conclusions of the Severe Sustained Drought (SSD) report with respect to the recent experience in the basin (and thus is very true to the language of our proposal).
- A second report to be submitted to a professional journal entitled: "Estimating the Yield of the Colorado River: A Confluence of Ideas?" This is where the WWA collaboration is particularly useful, as this is not a paper explicitly called for in the project proposal, but is nonetheless strongly desired by the water managers and political leaders in the basin with whom we interact. The intent of this paper is to review the entire suite of data and issues that contribute to the estimation of river yield, including paleo and climate change projections as well as issues associated with stream gaging.
- Two primers: one mostly covering law, management and political issues; and one covering climate issues. A working version of the "policy" primer has already been widely distributed as part of conference activities (described later); see http://www.colorado.edu/resources/colorado_river/hard_times_conference/NRLC_Conference_Primer.pdf Work on the climate primer has also been initiated, largely through our contribution to *Colorado River Basin Climate: Paleo, Present and Future* (sponsored by the California Department of Water Resources). (This report was distributed at the annual conference in December 2005 of the Colorado River Water Users Association.) Key information from both primers will be used as part of the journal papers described above.
- Establishment of web sites. We have already established an excellent online clearinghouse of salient reports and other information, and will continue to build upon this as time progresses; see http://www.colorado.edu/resources/colorado_river/. (This is yet another excellent example of collaboration with WWA.) Information on Colorado River climate and climate services will be the major focus of expansion.

These products are all being produced simultaneously and feature significant overlap. The intent is to produce information in multiple forms for multiple audiences, an essential strategy for ensuring that our findings permeate the largely distinct worlds of research and applications. Again, this strategy is greatly aided by (and influenced by) the involvement of the project PI's with the Western Water Assessment.

Several other additional accomplishments are worth noting:

- The collaboration with the Natural Resources Law Center (NRLC) on the design and hosting of *Hard Times on the Colorado River* (June 8-10, 2005), a national conference attracting roughly 200 of the most important political leaders working on Colorado River issues.
(http://wwa.colorado.edu/resources/colorado_river/hard_times_conference/index.html)
- Connie Woodhouse is serving on the National Research Council group established to review "The Scientific Bases of Colorado River Basin Water Management."
- Contribution to the interstate negotiations among the basin states through various (largely informal) means. One example is the service of myself on the master's degree (Engineering) committee for Carly Jerla (now with the Bureau of Reclamation, Lower Colorado River Office) entitled: "An Analysis of Coordinated Operation of Lakes Powell and Mead Under Lower Reservoir Conditions." The idea outlined in this proposal had its origins in the SSD study, and was consulted (and partially adopted) as part of ongoing negotiations between the 7-states. Another example is the comment submitted by the WWA during the EIS scoping process relating to Lower Basin shortage criteria development.
- Speaking engagements. Project researchers also are using project funds to support speaking engagements, including Kenney's presentations at the Colorado Water Workshop (*Uneasy Times Along the Colorado River* (Gunnison, 7/28/05)) and at NOAA-OGP (*Water's for Fighting: Colorado River Case Study* (with Brad Udall, 10/12/05)).

Project researchers continue to exploit opportunities to communicate with key regional decision-makers, such as those in attendance at the NRLC conference (mentioned above), and by attending the annual meetings of the Colorado River Water Users Association (including the December, 2005 event). (During that event, Andrea Ray took a side trip to Reclamation's Boulder City Operations Office.) Additionally, Ray continues to be involved with stakeholders associated with the EIS process associated with Gunnison River Basin operations. Still

other research accomplishments include a compilation of demographic trends in the region, the refinement of the SPRAT (South Platte Regional Assessment Tool) for use in assessing the vulnerability of Front Range users to Colorado River shortages, a review of interstate compacts and compact disputes, and our involvement in a variety of workshops and events (mostly WWA sponsored) designed to increase our understanding of decision-maker needs regarding climate and climate services. Again, the degree to which this project has been integrated into the work of WWA (and still other efforts) can make it difficult to precisely assign accomplishments to any one effort, but it is abundantly clear that this research approach is leading to accomplishments that go beyond those promised in the Scope of Work.

Conclusion

In conclusion, I'm pleased with the progress made to date. With the exception of the scheduling issue mentioned at the start of this memo, the only significant problem encountered in the project is that the focus of our research continues to become more salient and complex with each passing year. We view this, however, as a good problem.



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